

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:

Tracy D. Powers et al.

Serial No.: 09/919,192

Filed: July 31, 2001

For: **REMOTE RECONFIGURATION
SYSTEM**

Confirmation No. 3966

Art Unit: 2152

Examiner: Ramsey Refai

Customer No. **32658**

Docket No. P5387

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Commissioner for Patents
P.O. Box 1450
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APPEAL BRIEF UNDER 37 CFR § 41.37

I. Real Party in Interest

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II. Related Appeals and Interferences

No other appeals or interferences are currently known to Appellants that will directly affect, be directly affected by, or have a bearing on the decision to be rendered by the Board of Patent Appeals and Interferences in the present appeal.

III. Status of Claims

Claims 1-7, 9-11, and 17-20 are pending in the application, with claims 8 and 12-16 being cancelled. No claims have been allowed. The rejection of claims 1-7, 9-11, and 17-20 are the subject of this appeal.

IV. Status of Amendments

No claim amendments were filed subsequent to the final rejection mailed June 14, 2006, and all claim amendments have been entered.

Claims 1-7, 9-11, and 17-20 are provided in the attached Claims Appendix.

V. Summary of Claimed Subject Matter

Claims 1, 7, and 17 are independent claims that are being appealed.

Claim 1 is directed to a remote reconfiguration computer system that includes a storage management host installed in a client data storage system. With reference to Appellants' specification, Figure 1 shows an exemplary reconfiguration system 100 with a storage management host 144 installed in a client data storage system 140. The description of system 100 begins at line 12 of page 7. According to claim 1, the data storage system 140 has a first configuration, which may be stored as one of the client configurations 172 in memory 170 and/or gathered or collected as information in the system 100 as described at steps 210 and 224 of the remote reconfiguration process 200 shown in Figure 2 and as described at page 13, line 1 to page 14, line 28. In conjunction with "levels of service" for such reconfigurations, exemplary reconfigurations of a data storage system 140 and/or storage unit are described from page 15, line 12 to page 16, line 21. With further reference to Figure 1, the storage management host 144 of claim 1 provides remote access and a communication link to a master storage unit 150, 152, 160, or 162 and host 166 of the data storage system 140, e.g., via Ethernet connection 146 and/or serial ports 148.

Significantly, the reconfiguration computer system of claim 1 further comprises a reconfiguration center, such as center 110 of Figure 1, located remote to the storage management system, e.g., system 140. According to claim 1, the reconfiguration center receives a reconfiguration request from the client data storage system, e.g., system 140 and in response, **transfers a logical implementation "selected or created based on the reconfiguration request and the first configuration" to the client data storage system "via the storage management host."** The claimed reconfiguration center and this particular claim element are

described in Appellants' specification with reference to Figure 2 and steps or processes 220, 230, 240, 250, and 260 and from page 13, line 13 to page 18, line 18 with emphasis being provided for the creating of a logical implementation of a data storage subsystem reconfiguration based on a received request and on the existing or first configuration of the data storage system.

Independent claims 7 and 17 are directed to methods of remotely reconfiguring a data storage system with limitations similar to that of claim 1 but presented in method form. As a result, the summary of the claimed invention provided for claim 1 is at least partially applicable to the methods of claims 7 and 17. Generally, the elements of claims 7 and 17 can be found in the process 200 of Figure 2 and/or in the description of operations of the reconfiguration system 100 shown in Figure 1 and discussed with reference to claim 1.

More specifically, however, claim 7 is directed to a method for remotely reconfiguring a data storage system that includes: monitoring a client data storage system (see step 210 in Figure 2 and client data storage system 140 and remote reconfiguration center 110 of Figure 1); based on such monitoring, transmitting from the remotely-located reconfiguration system a recommended reconfiguration for a monitored master storage unit to the client data storage system (see steps 210 and 214 of Figure 2 and remote reconfiguration center 110, reconfiguration tools 176, storage management host 144, and master storage units 150, 152, 160, 162, and 164 of Figure 1); receiving a reconfiguration request at the remotely-located reconfiguration system (see step 214 or 220 of Figure 2); in response to the request, determining the first configuration of the master storage unit (see step 210 or 224 of Figure 2); and then, from the remotely-located reconfiguration system, transferring a logical implementation for execution to reconfigure the master storage unit, with the logical implementation being generated based on the reconfiguration request, the first configuration, and the results of the monitoring (see steps 230, 240, 250, 260, 270, and 280 of Figure 2).

Claim 17 has some similarities to the method of claim 7. Hence, the description of claim 7 is applicable to claim 17 in that the claimed methods call for a reconfiguration system to receive a reconfiguration request and to determine a first configuration of a data storage system associated with the request. The method of claim 17 differs from that of claim 7 because the

claim 17 methods calls for identifying a “level of configuration services” for the data storage system and defining a logical implementation for the data storage system based on this identified level of service as well as the first configuration. The concept of “levels of service” are described in Appellants’ specification at page 15, line 2 to page 16, line 20, and this description clarifies how each of these service levels may be used to determine how to reconfigure a data storage system in combination with an existing or first configuration.

As can be seen from a review of the language of claim 17, the method involves defining differing reconfigurations for data storage systems based on the level of service determined for the storage system and not just providing an optimal reconfiguration for all requests (e.g., did a customer contract for a basic level of service or a higher level, do they want reconfiguration performed monthly or at some other service interval, and/or other service-level questions). The method of claim 17 also calls for the logical implementation to be transferred to the storage management host installed on the data storage system and then the logical implementation is executed to reconfigure the master storage unit (see steps 280 and 290 of the method 200 of Figure 2).

VI. Grounds of Rejection to be Reviewed on Appeal

1. Claims 1-5, 7, 9, 10, and 17-20 stand rejected under 35 U.S.C. §102.
2. Claims 6 and 11 stand rejected under 35 U.S.C. §103.
3. Claims 7 and 9-11 also stand rejected under 35 U.S.C. §112.

VII. Argument

Rejection of Claims 1-5, 7, 9, 10, and 17-20 Under 35 U.S.C. §102 is Improper

In the final Office Action of June 14, 2006, claims 1-5, 7, 9, 10, and 17-20 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,480,901 (“Weber”). This rejection is traversed based on the following remarks, and Appellants request that the rejection be reversed as not properly supported.

As discussed in Appellants' July 25, 2006 Amendment, claim 1 is directed to a remote configuration computer system that includes a storage management host installed in a client data storage system. The data storage system has a first configuration, and the storage management host provides remote access and a communication link to the master storage unit and host of the data storage system. The system further comprises a reconfiguration center located remote to the storage management system. The reconfiguration center **receives a reconfiguration request and in response transfers a logical implementation "selected or created based on the reconfiguration request and the first configuration" to the client data storage system "via the storage management host."** Weber fails to teach or suggest a system for remote reconfiguring of a data storage system as called for in claim 1.

Specifically, claim 1 calls for the remote reconfiguration center to receive a reconfiguration request from the client data storage system. The final Office Action cites Weber at Figure 4, col. 4, line 62 to col. 5, line 2 and at col. 6, lines 1-15 for teaching this limitation. Initially, it should be understood that Weber is directed toward management stations that can access varying controller interfaces to allow them to manage operation of a plurality of varying storage devices via their varying controllers. Hence, Weber teaches a device that may be used within an enterprise or by a system administrator to manage all the networked storage devices. However, Applicants' invention is directed more toward servicing client or remote systems based on monitored operation and configurations and responding to reconfiguration requests or providing reconfiguration requests, and this would not be a problem that would need to be addressed by Weber.

Particularly, in Figure 4, Weber shows a management station that is useful for providing control commands to a RAID system 404 via network 402, but there is no teaching of the management device 406 "receiving a reconfiguration request for the client data storage system from the client data storage system" as called for in claim 1. At col. 4, line 62 to col. 5, line 2, Weber teaches that its management stations may be remotely attached to the network 102 to manage storage devices remotely, but there is no showing of receiving a reconfiguration request from a data storage system. Finally, at col. 6, lines 1-15, Weber states that the management stations 112, 120 "can issue management commands directly to storage controller 142 via network 102..." but there is no discussion that these commands are sent in response to receiving

reconfiguration requests from the data storage systems or storage controllers. For this reason alone, Weber fails to anticipate the system of claim 1, and Appellants request that the rejection of claim 1 based on Weber be reversed.

Further, claim 1 calls for the logical implementation to be “selected or created based on the reconfiguration request and the first configuration.” As there is no reconfiguration request, any commands sent from the management stations in Weber cannot be based on such a request. Additionally, the logical implementation is also based on the first configuration. Weber provides no teaching that it is useful or desirable to select or create a logical implementation defining a second configuration based on the first or existing configuration of its managed devices. The final Office Action cites Weber at col. 23, line 10 to col. 24, line 25 for providing this teaching. However, Weber at this citation teaches the use of object graphs to show changes in configuration of a managed storage system with “deltas” being used to show the changes. But, this does not teach that Weber’s management stations or software therein generate a logical implementation that is transferred to the client data storage system based on the reconfiguration request AND the first configuration. It only teaches a method of tracking changes after a configuration of a system is completed. Hence, the cited portions of Weber fail to teach that the logical implementation is based both on the reconfiguration request and on the first or existing configuration of the client data storage system. For this additional reason, claim 1 is not anticipated by Weber.

Claims 2-5 depend from claim 1 and are believed allowable for at least the reasons for allowing claim 1.

In the Advisory Action mailed August 4, 2006, the Examiner disagreed with the above reasons for allowing claim 1 over Weber. The Examiner referred Appellants to Weber at col. 9, lines 64-67, col. 17, lines 19-50, col. 13, lines 35-63, col. 14, lines 8-40, col. 11, lines 25-64, col. 7, lines 20-48, and col. 5, lines 33-61. However, Appellants note that again the Examiner is stating that the act of monitoring a system to identify a problem and when one is noted that this is somehow a “request” as called for in claim 1. Appellants again strongly disagree. There is no communication of a request for reconfiguration being sent from the monitored system but, at most, information is being gathered and problems identified, which differs from reconfiguration request being transmitted by a client data storage system. Further, the remarks in the Advisory

Action then state that configuration can be changed but there is no discussion in these remarks or in Weber that such changes are being created based on the reconfiguration request and upon an existing or first configuration. Appellants reviewed all of the portions of Weber cited in the Advisory Action and could find no support for a reconfiguration center that receives a reconfiguration request and uses this request and an existing or first configuration to create a second configuration that is transmitted to a client data storage system.

Further, the Advisory Action only discussed the arguments presented regarding claim 1, and it failed to address any additional reasons provided for allowing independent claims 7 and 17. Additionally, the Advisory Action failed to state whether the Examiner believed the indefiniteness rejection had been properly overcome by Appellants.

Claim 7 is directed to a method for remotely reconfiguring a data storage system that includes: monitoring a client data storage system, based on such monitoring transmitting a recommended reconfiguration for a monitored master storage unit, receiving a reconfiguration request, in response to the request determining the first configuration of the master storage unit, and then transferring a logical implementation for executing to reconfigure the master storage unit that is generated based on the reconfiguration request, the first configuration, and the results of the monitoring. Claim 7 has similar limitations to claim 1, but that are written in method form, and as a result, the reasons provided for allowing claim 1 over Weber are believed applicable to claim 7.

Further, claim 7 calls for receiving a reconfiguration request and determining a first configuration of a master storage unit. Weber fails to teach the receiving as discussed with reference to claim 1 and also, fails to teach the determining in response to a request. Claim 7 is rejected for the reasons provided for rejecting claim 1; however, claim 1 did not call for determining a first configuration based on a request for reconfirmation. Hence, the Office Action fails to state a proper *prima facie* case of anticipation as it did not provide a specific citation for each and every limitation of claim 7. Appellants request that the rejection be reversed for this additional reason. Appellants requested that the Examiner provide a citation to Weber showing such determining of a configuration in response to a reconfiguration request, but, to date, the Examiner has continued to reject claims 7 and 17 as if they contained exactly the same claim limitations as claim 1.

Further, Weber fails to teach “based on the monitoring, transmitting from the remotely-located reconfiguration system a recommended reconfiguration for the master storage unit to the client data storage system.” Again, claim 7 is only rejected for the reasons provided for claim 1, but claim 1 does not call for transmitting a recommended reconfiguration of the master storage unit. Weber teaches transmitting commands to storage controllers from a management station but not providing a recommended reconfiguration based on monitoring and not for a master storage unit of a storage system. A proper anticipation rejection has not been stated, yet, and Appellants do not believe Weber supports an anticipation rejection of claim 7 for this additional reason.

Claim 9 depends from claim 7 and is believed allowable over Weber at least for the reasons provided for claim 7. Further, claim 9 calls for **determining a level of reconfiguration services** and **creating the logical implementation based on the identified level**. Weber fails to teach or suggest the utilization of levels of service with regard to generating reconfiguration logical implementations. The level of configuration services concept is described in detail beginning at page 14, line 29 of Appellants’ specification, and this concept as described or as claimed in Claim 9 are not shown or suggested by Weber. The final Office Action cites Weber at col. 7, lines 49-52, but at this citation, Weber mentions updating software to a new level. This is NOT what is called for in claim 9, as a level of software does not teach “a level of reconfiguration services” or creating a logical implementation defining a second configuration based on such an identified level (e.g., how would one decide what configuration to implement at a data storage system based on a change in the level of its interface software?). For this additional reason, claim 9 is allowable over Weber. The Advisory Action does not address this deficiency of Weber.

Claim 10 defines what is meant by “service level options” and depends from claim 9. Weber fails to discuss such service level options, and claim 10 was rejected for the same citations as claims 5 and 18. Weber is cited at col. 5, lines 5-16 presumably because “RAID” systems are discussed. But, there is no discussion whatsoever of “service level options” and how they may be used in configuring a data storage system. For these additional reasons, claim 10 is allowable over Weber.

Independent claim 17 is directed to a method of remotely reconfiguring a data storage system. The method of claim 17 calls for a reconfiguration system to receive a reconfiguration request, to determine a first configuration of a data storage system associated with the request, to identify a “level of configuration services” for the data storage system, and to define a logical implementation for the data storage system based on the identified level of service and based on the first configuration. The logical implementation is then transferred to the storage management host installed on the data storage system and executed to reconfigure the master storage unit. The reasons provided for allowing claim 7 over Weber are believed applicable to claim 17.

Additionally, Weber fails to show the feature of defining a logical implementation of a reconfiguration based on an identified level of service and on a first configuration as discussed with reference to dependent claim 9. The term “level of service” is defined in Appellants’ specification at least in the paragraph beginning at page 15, line 12, and the use of such levels of service to determine/define how a system is to be reconfigured is not taught or suggested by Weber. Hence, Weber fails to teach each and every limitation of claim 17 as required under 35 U.S.C. §102, and the Examiner has yet to state a proper anticipation rejection because on page 4 of the final Office Action claim 17 is rejected only for the reasons provided for claim 1, which does not include any limitation regarding a “level of configuration services.”

Claims 18-20 depend from claim 17 and are believed allowable for at least the reasons provided for allowing claim 17. Further, claim 18 defines what is meant by “service level options” and is believed allowable over Weber for the reasons provided for allowing claim 10.

Rejection of Claims 6 and 11 Under 35 U.S.C. §103 is Improper

In the final Office Action of June 14, 2006, claims 6 and 11 were rejected under 35 U.S.C. §103(a) as being unpatentable over Weber in view of Official Notice. This rejection is traversed based on the following remarks, and Appellants request that the rejection be reversed as not properly supported.

As discussed in Appellants’ July 25, 2006 Amendment, claims 6 and 11 depend from claim 1 and claim 7, respectfully, and are believed allowable as depending from an allowable base claim. Further, “Official Notice” is not taken to try to overcome the deficiencies of Weber discussed above with reference to claims 1 and 7.

Rejection of Claims 7 and 9-11 Under 35 U.S.C. §112, Second Paragraph is Improper

In the final Office Action of June 14, 2006, claims 7 and 9-11 were rejected under 35 U.S.C. §112, second paragraph as being indefinite. This rejection is traversed because the claim language in claims 7 and 9-11 is definite and meets the requirements of 35 U.S.C. §112, second paragraph. Appellants request that the rejection be reversed as not properly supported.

As discussed in Appellants' July 25, 2006 Amendment, the final Office Action asserts that it is not clear from the claim language "why a recommended configuration is sent from the remotely located reconfiguration system to the client data storage system before a reconfiguration request is received from the client data storage system." The method 200 shown in Figure 2 shows just such a situation in which a remotely located reconfiguration system acts to monitor 210 a client system and "Recommend Reconfiguration" without first being requested (which is shown in the alternative path at 220 where the monitored client or system ask for assistance). Such "preemptive reconfiguration recommendations" are discussed in the specification beginning at page 12, line 29 and are said to be transmitted on an ongoing basis or periodically "to optimize or enhance operation of the client data storage system 140" (of Figure 1).

The Office Action further argues that claims 7 and 9-11 are indefinite because it is not clear "who performs the monitoring." It is not presently a limitation which device or component performs the monitoring as this is not a limitation that is required to define the invention or distinguish the method from the cited references. In other words, the monitoring of claim 7 may be performed in a number of ways and be covered by the breadth of the claim language (e.g., the monitoring may be performed by "a monitoring routine implemented in the reconfiguration server 112" as discussed at page 13, lines 5 and 6, which would result in monitoring being done at the remotely-located reconfiguration system with data being transmitted from the client data storage system).

The final Office Action further states that it is unclear in claim 7 "why a recommended reconfiguration is sent and what the purpose or impact the recommended configuration has on the claimed invention." Again, "why" is not believed to be a requirement for definiteness as it is presently clear that a recommendation is transmitted from the remotely-located reconfiguration system based on monitoring of the client data storage system. There is no indefiniteness in the

claim language. Appellants believe further claim limitations would not necessarily make the method limitations more clear but simply would narrow the claim coverage while not being required based on the teaching of Weber.

Further, the Office Action said the language is indefinite because it is now unclear “what the purpose or impact the recommended configuration has on the claimed invention.” Claim language is not indefinite if it excludes intended purpose or function language and such language is often objected to during prosecution of claims or at least not given patentable weight. However, it may be inferred from the existing claim language that the reconfiguration request from the client data storage system may be a result of the transmitted recommendation (such as is the case in block 214) but this is not a requirement of the claim language (see also block 220 of Figure 2). However, such broader coverage does not make the language indefinite as the claim language of claim 7 defines the invention (or portions of the invention) shown in the process 200 of Figure 7 in a manner that allows readers of the claim to understand with particularity what method is being claimed as the Appellants’ invention.

For these reasons, Appellants request that the rejection of claim 7 and claims 9-11, which depend from claim 7, based on indefiniteness be reversed.

Conclusion

In view of all of the above, all the pending claims are believed to be allowable and the case in condition for allowance. Appellants respectfully request that the Examiner’s rejections be reversed for all the pending claims.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

1. A remote reconfiguration computer system, comprising:
a storage management host installed in a client data storage system, wherein the client data storage system includes a data storage subsystem having a first configuration and comprising at least one master storage unit for storing data and providing access to the stored data and one host linked to the master storage unit, and further wherein the storage management host is communicatively linked to and adapted to provide remote access to the master storage unit and the host; and
a reconfiguration center communicatively linked to the storage management host, the reconfiguration center being located remote to the client data storage system and configured for receiving a reconfiguration request for the client data storage system from the client data storage system and for, in response to the received reconfiguration request, transferring a logical implementation of a second configuration to the client data storage system via the storage management host, wherein the client data storage system is operable to process the logical implementation to configure the data storage subsystem in the second configuration, wherein the logical implementation is selected or created based on the reconfiguration request and the first configuration.
2. The computer system of claim 1, wherein the storage management host is a terminal server configured to provide Ethernet connection to a local area network (LAN) connected to the host and the master storage unit.
3. The computer system of claim 2, wherein the storage management host is further configured to provide serial connection with the master storage unit.
4. The computer system of claim 1, further including a second data storage subsystem having at least one master storage unit and at least one host linked to the master storage unit and wherein the master storage unit of the second data storage subsystem is a different type of data storage device than the master storage unit of the other data storage subsystem.

5. The computer system of claim 1, wherein the transferred logical implementation includes executables that affect a change in the first configuration selected from the group consisting of a logical unit number (LUN) size change, cache blocking, establishing hot standby, changing RAID, logically moving the master storage unit or a portion thereof, mainframe device type changing, adding channels, and increasing performance.

6. The computer system of claim 1, wherein the reconfiguration center includes a modem and the client data storage system includes a dialback modem, wherein the dialback modem is adapted to respond to a connection initiated from the modem by requesting entry of a password, to verify an entered password, to upon verification of the password disconnect the connection and initiate a connection to the modem.

7. A method for remotely reconfiguring a data storage system, comprising:
installing a storage management host within a client data storage system and communicatively linking the storage management host to a remotely-located reconfiguration system and to a master storage unit in the client data storage system;
monitoring the client data storage system;
based on the monitoring, transmitting from the remotely-located reconfiguration system a recommended reconfiguration for the master storage unit to the client data storage system;
at the remotely-located reconfiguration system, receiving a reconfiguration request for the client data storage system from the client data storage system;
in response to the receiving of the reconfiguration request, determining a first configuration of the master storage unit with the remotely-located reconfiguration system;
transferring from the remotely-located reconfiguration system a logical implementation of a data storage system configuration to the storage management host, the logical implementation being generated based on the reconfiguration request, the first configuration, and results of the monitoring; and

executing the logical implementation to reconfigure the master storage unit from the first configuration to a second configuration.

9. The method of claim 7, further including identifying a predetermined level of reconfiguration services from a plurality of service level options and creating the logical implementation based on the identified level of reconfiguration services.

10. The method of claim 9, wherein the service level options comprises services selected from the group consisting of changing logical unit number (LUN) size, cache blocking, establishing hot standby, changing RAID, logically moving the master storage unit or a portion thereof, changing mainframe device type, adding channels, increasing performance, and providing ongoing configuration monitoring.

11. The method of claim 7, further including remotely verifying and testing the second configuration.

17. A method for remotely reconfiguring a data storage system, comprising:
installing a storage management host within a client data storage system, the client data storage system having a first configuration;
communicatively linking the storage management host to a remotely-located reconfiguration system and to a master storage unit in the client data storage system;
receiving a reconfiguration request for the client data storage system from the client data storage system at the remotely-located reconfiguration system;
determining with the remotely-located reconfiguration system a first configuration of the client data storage system including the master storage unit;
identifying a level of reconfiguration services from a plurality of service level options for the client data storage system;
defining a logical implementation for the client data storage system based on the identified level of reconfiguration services and the first configuration;
transferring from the remotely-located reconfiguration system a logical implementation of a data storage system configuration to the storage management host; and

executing the logical implementation to reconfigure the master storage unit from a first to a second configuration.

18. The method of claim 17, wherein the service level options comprise services selected from the group consisting of changing logical unit number (LUN) size, cache blocking, establishing hot standby, changing RAID, logically moving the master storage unit or a portion thereof, changing mainframe device type, adding channels, increasing performance, and providing ongoing configuration monitoring.

19. The method of claim 17, further including remotely verifying and testing the second configuration.

20. The method of claim 17, further including prior to the receiving the reconfiguration request, monitoring the client data storage system and based on the monitoring, issuing a recommended reconfiguration for the client data storage system.

IX. EVIDENCE APPENDIX

No copies of evidence are required with this Appeal Brief. Appellants have not relied upon any evidence submitted under 37 C.F.R. §§ 1.130, 1.131, or 1.132.

X. RELATED PROCEEDINGS APPENDIX

There are no copies of decisions rendered by a court or the Board to provide with this Appeal as there are no related proceedings.